

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY^{1/}

Core samples from U.S. Bureau of Mines Wyoming Corehole 10 drilled in 1974 in NW1/4SW1/4SE1/4 (786.5 FSL, 2,534.0 FEL) of sec 4, T 24 N, R 109 W, Sweetwater County, Wyoming

Surface elevation: 6,617.3 feet
Cored interval: 202.7 to 540.4 feet

From	To	Description
LANEY MEMBER OF GREEN RIVER FORMATION		
202.7	204.4	Shaly mudstone: Medium slightly brownish gray, calcareous. Faint very fine laminae. Regular thick to some thin parting; fairly regular fracture. Some ostracods in lower part.
204.4	205.4	Oil shale: Olive gray, calcareous, silty in upper part. Very faintly laminated and streaked to massive. Regular to some irregular thick to thin parting; some slight to coarse hackly fracture.
205.4	206.2	Marlstone: Medium to light slightly olive and brownish gray, slightly calcareous to dolomitic. Very faintly streaked and laminated. Regular thick to some thin parting; slightly irregular fracture. Faintly bedded light brownish-gray to tan dolomite band at 205.5-205.7.
206.2	209.0	Oil shale: Medium to some dark olive gray and slightly brownish gray, calcareous. Very faint streaks and laminae becoming marked by fairly abundant very fine buff earthy laminae and streaks in lower part. Regular thick to thin parting; some slight hackly fracture. Sample of oil shale with some very fine buff laminae and streaks from 208.3 feet: X-ray--quartz, analcime, aragonite, pyrite, feldspar, calcite, dolomite.
209.0	220.1	Oil shale: Medium and some dark brownish and olive gray, calcareous. Very faint laminae and streaked bedding; some distinct buff laminae as above from about 213.0 to 218.0. Regular thick to thin parting; regular and some slight to rare coarse hackly fracture. Some ostracods (?) in lower part. Thin dark gray silty lamina at 218.6.
220.1	222.3	Missing
222.3	224.3	Oil shale: Medium to very dark olive gray and brownish gray, calcareous to dolomitic. Faint very fine laminae. Regular thick to some thin parting; slightly irregular fracture. Sparse ostracods.
224.3	225.3	Oil shale: Grayish brown to very dark brownish gray, calcareous. Faint very fine laminae. Regular thick to some thin parting; regular and rare hackly fracture. Firm slightly silty grayish-brown laminated zone with brown blebby tuff nodules at top and wavy contact at bottom at 224.4-224.9.
225.3	227.1	Oil shale: Medium to dark olive gray, brownish gray near top, calcareous. Faint very fine laminae with abundant very fine distinct buff earthy laminae and streaks. Regular thick to some papery parting; regular and some hackly fracture. A very thin dark gray silty lamina at 225.9. A very thin gray blebby analcime lamina at 227.05.

^{1/} By L. G. Trudell, completed July 10, 1975

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From	To	Description
227.1	227.3	Mudstone (tuff?): Dark to medium slightly brownish gray, calcareous. Very faint streaked bedding. Sharp regular contacts.
227.3	228.1	Oil shale: Medium to some dark olive gray, calcareous. Faint very fine laminae and streaked bedding; some very fine distinct buff earthy laminae near top. Regular thick to some thin parting; fairly regular fracture.
228.1	228.4	Tuff: Dark to medium gray, silty, massive. Wavy contacts.
228.4	229.4	Oil shale: Medium to some dark brownish gray, dolomitic to calcareous. Faint very fine laminae; abundant buff earthy laminae below 229.1. Regular thick to rare thin parting; regular fracture.
229.4	230.2	Oil shale: Dark to some medium brownish gray, dolomitic to calcareous. Faint streaked bedding and very fine laminae with some distinct buff earthy streaks and laminae. Regular thick to rare thin parting; regular to irregular fracture. Slightly silty (tuffaceous?) zone at 229.5-229.7.
230.2	230.7	Oil shale: Dark to medium brownish gray and olive gray with very abundant very fine distinct buff laminae and streaks.
230.7	231.6	Oil shale: Olive gray, brownish black at 231.2-231.3, calcareous. Faint very fine laminae and streaked bedding; some very fine buff streaks. Regular thick parting; fairly regular fracture. Very thin slightly wavy and pinched out dark gray silty pyritic layer at 230.8.
231.6	232.0	Oil shale: Like 230.2-230.7. Very thin dark gray silty lamina at 231.75. Thin to papery parting.
232.0	233.0	Oil shale and mudstone: Oil shale like 229.4-230.2 interfingered with medium brownish-gray mudstone.
233.0	235.0	Oil shale: Medium to some dark olive gray and brownish gray, brownish black in upper inch, calcareous. Faint very fine laminae, abundant distinct buff streaks in upper 0.6 foot. Regular thick to rare thin parting; regular to some irregular fracture. A very thin light gray biotitic tuff lamina at 233.4; very thin dark gray pyritic layers at 233.8 and 234.7. Very fine disseminated biotite on parting surfaces at 233.95. Sample of medium to dark olive-gray and brownish-gray oil shale from 234.4 feet: X-ray--calcite, quartz, analcime, aragonite, feldspar, dolomite, illite.
235.0	236.0	Oil shale: Dark brownish gray, calcareous to dolomitic. Faint very fine laminae and streaked bedding; abundant very fine distinct buff earthy streaks and laminae in upper part. Slightly irregular thick parting; irregular fracture. A very thin irregular medium gray silty tuff layer at 235.1. A 1-inch irregular medium brownish-gray mudstone layer at 235.7.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

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From	To	Description
236.0	236.8	Mudstone and oil shale: Brownish-gray mudstone finely streaked with dark oil shale as above; few thin continuous oil-shale layers. Irregular parting and fracture. Sample of brownish-gray mudstone from 236.5 feet: X-ray--quartz, analcime, feldspar, pyrite, dolomite, calcite, illite.
236.8	237.9	Marlstone, mudstone, and oil shale: Light to dark gray and brownish gray, calcareous to dolomitic. Faint to distinct laminae; irregular layers and some slight unconformities in upper part. Irregular to regular thick parting; irregular to regular fracture. Thin to 3/4-inch irregular lenticular light brownish-gray to dark gray analcime stringers at 237.0-237.3. A 1-3/4-inch regular dark slightly brownish-gray silty band at 237.6.
237.9	238.7	Oil shale: Medium to very dark brownish gray, dolomitic. Faint very fine laminae; some slightly wavy. Irregular to regular thick to medium parting; irregular to slightly conchoidal fracture. Irregular 3/4- to 1-1/2-inch brownish-gray to dark gray biotitic tuffs at 238.1, 238.3, and 238.6.
238.7	239.7	Oil shale: Dark to some medium brownish gray, dolomitic. Very faint laminae and streaked bedding. Regular to irregular thick to very thin parting; irregular and some coarse to sharp hackly fracture; split surfaces have turned brownish-black after only three days of exposure. Sample of dark brownish-gray oil shale from 239.0 feet: X-ray--quartz, analcime, feldspar, illite, montmorillonite, mixed layer clay, dolomite, pyrite.
239.7	242.2	Oil shale: Medium-dark brownish gray, calcareous. Faint very fine laminae and streaked bedding; inclined and slightly wavy at 240.5. Regular to some irregular thick to thin parting; coarse hackly to some regular fracture.
242.2	243.2	Oil shale: Medium to very dark brownish gray, calcareous to dolomitic. Very faint streaked bedding and very fine laminae. Regular to irregular thick to rare thin parting; fairly regular to coarse hackly fracture.
243.2	245.0	Oil shale: Like 239.7-242.2. Some dark brownish-gray oil shale in lower part.
245.0	245.4	Mudstone: Slightly brownish gray, calcareous. Massive; a 3/4-inch stringer of oil shale as above at 245.15. Regular upper contact; slightly wavy lower contact.
245.4	246.3	Oil shale: Medium to dark brownish gray, calcareous. Faint very fine laminae and streaked bedding. Regular to irregular thick to rare thin parting; slightly irregular and some hackly fracture. Abundant interbedded light to medium olive-gray and brownish-gray mudstone stringers and streaks.
246.3	251.0	Mudstone and siltstone: Light brownish gray, calcareous. Faint irregular bedding with fine distorted to contorted dark oil-shale stringers and streaks. Irregular thick parting; regular to irregular fracture.

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Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
251.0	252.2	Oil shale: Dark brownish gray, calcareous. Faint very fine laminae and streaked bedding; some distorted. Fairly regular to irregular thick parting; irregular to regular fracture. Some light to medium brownish-gray mudstone stringers.
252.2	257.9	Mudstone and siltstone: Light brownish gray, calcareous. Massive with some faint distorted to contorted bedding. Irregular thick parting; regular to irregular fracture. Dark oil shale as above at 253.6-254.1 and a 1-1/2-inch irregular layer at 257.0.
257.9	259.3	Mudstone and siltstone: Light brownish gray to buff and gray buff, calcareous. Faint fairly regular to contorted and displaced bedding; some brownish-gray to black oil-shale laminae, bands, and stringers. Irregular thick parting; irregular to regular fracture.
259.3	260.4	Oil shale and mudstone: Tan and rare buff to medium and some dark brownish gray, dolomitic. Faint to some distinct very fine intricately contorted and displaced laminae. Irregular to fairly regular parting; regular to irregular fracture.
260.4	261.4	Mudstone and siltstone: Buff and gray buff to some medium and dark brownish to almost neutral gray, calcareous. Faint to distinct irregular inclined streaks and laminae; some large displacements; unconformable contacts at top and bottom.
261.4	264.1	Oil shale: Medium to dark brownish gray and olive gray, dolomitic. Faint streaked bedding and very fine laminae; some wavy and inclined in upper part. Irregular to rare regular thick to medium parting; irregular and some coarse hackly fracture. A 1-1/2-inch slightly brownish-gray tuff band at 262.4; becoming very biotitic near base. A thin to 1-inch pinch-and-swell medium gray biotitic tuff at 263.4.
264.1	264.7	Mudstone and some oil shale: Light gray to dark brownish-gray laminated mudstone and oil shale in upper and lower parts; medium slightly brownish-gray massive mudstone with displaced contacts at 264.35-264.6.
264.7	265.2	Oil shale: Medium to some dark olive gray and brownish gray, rare buff in lower part, dolomitic. Very faint to rare distinct very fine laminae and streaked bedding; becoming curved in lower part. Regular to irregular thick to medium parting; irregular fracture. Becoming finely laminated and streaked with gray-buff mudstone near base.
265.2	266.2	Siltstone: Dark gray and gray buff to light brownish gray, calcareous in light parts. Thick sharply bounded dark and light layers inclined 20-40 degrees; thick wedge-shaped light stringer at 266.2; sharp regular flat contact with oil shale below. Irregular thick parting; slightly irregular fracture.

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From	To	Description
266.2	266.6	Oil shale: Dark to light brownish gray and gray buff, dolomitic. Faint to distinct laminae. Regular to irregular thick to medium parting; slightly irregular fracture. A thin dark slightly brownish-gray silty to very fine sandy-textured tuff band at 266.4 and a thin medium to light gray silty lamina at base.
<p>BOTTOM OF LANEY MEMBER TOP OF WILKINS PEAK MEMBER</p>		
266.6	268.5	Oil shale: Medium and rare dark olive gray, becoming grayish brown near bottom. Faint laminae and streaked bedding. Irregular and some regular thick parting; slightly conchoidal to irregular fracture. A thin vermiform light gray marly stringer near base. Sharp regular contact with dark oil shale below. Sample of olive-gray oil shale from 267.8 feet: X-ray--dolomite, quartz, calcite, feldspar, aragonite, illite.
268.5	270.6	Oil shale: Dark to medium brownish gray and some brown, dolomitic. Faint to some distinct laminae. Regular to irregular and some wavy thick to some thin parting; fairly regular to irregular fracture. Few thin gray marly stringers in upper part; thin to thick vermiform stringers through most of lower part. Dark gray to medium grayish-brown silty tuff band at 269.2-269.5. Very sharp regular contact with marlstone below.
270.6	271.4	Marlstone: Yellowish buff and tan to rare medium olive gray, dolomitic. Very faint laminae and bands. Regular to irregular thick to medium parting; regular to slightly irregular and conchoidal fracture.
271.4	272.0	Marlstone: Light and rare medium olive gray to very light olive buff, variably calcareous and dolomitic. Faint laminae, bands, and streaks. Irregular to regular thick to rare thin parting; irregular to regular fracture. Abundant fine calcite blebs in darker zone at 271.5-271.6. A thin irregular brownish-gray silty to very fine sandy-textured tuff at 271.9.
272.0	272.1	Missing
272.1	273.3	Marlstone and mudstone: Olive buff to light gray and white, dolomitic and some calcareous. Irregular to regular medium to thick parting; regular to some irregular fracture. Sample of very light gray mudstone from 272.9 feet: X-ray--quartz, dolomite, feldspar, analcime, illite.
273.3	276.1	Oil shale: Dark and rare medium olive gray and brownish gray to some black, dolomitic. Faint to some moderately distinct streaked bedding. Fairly regular to irregular thick parting; slightly irregular to rare coarse hackly fracture. Sample of dark brownish-gray to black oil shale from 275.4 feet: X-ray--quartz, dolomite, analcime, calcite, feldspar, illite, pyrite, montmorillonite.

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From	To	Description
276.1	277.3	Oil shale: Olive gray and grayish brown, some buff and rare tan, slightly calcareous. Faint streaked bedding to faint and some distinct laminae and bands. Irregular to some regular thick to rare thin parting; slightly irregular to some hackly fracture. Nodular algal layer at contact with dark oil shale above. Silty limestone laminae and streaks becoming abundant in lower part. Olive-buff biotitic tuff at 276.8-277.1.
277.3	278.3	Marlstone: Buff to rare medium olive gray and brownish gray, dolomitic. Faint and rare distinct bands, laminae, and streaks. Regular to irregular thick parting; fairly regular fracture. A 2-inch light gray to white biotitic tuff band near top.
278.3	280.8	Marlstone and mudstone: Light gray in upper part to light and rare medium olive gray and brownish gray in lower part, dolomitic to calcareous. Very faint to some moderately distinct laminae and streaked bedding. Regular to irregular thick parting; slightly conchoidal to irregular fracture.
280.8	283.8	Siltstone and mudstone: Light gray to gray buff to light and medium slightly brownish gray, calcareous. Massive; some very faint contorted bedding in upper part and some very faint regular laminae in lower part; sharp regular contacts at top and bottom; a thin brownish-gray oil-shale lamina at 283.2. Irregular to fairly regular thick parting; fairly regular fracture. Sparse very fine carbonaceous plant debris mostly in lower part.
283.8	285.5	Marlstone and mudstone: Light to medium almost neutral gray to grayish brown, dolomitic to slightly calcareous, very calcareous grayish-brown silty layers in middle part. Faint fine to thin laminae and rare bands. Irregular to fairly regular thick parting; conchoidal to slightly irregular fracture.
285.5	289.8	Marlstone: Light to medium olive gray, olive green, and some greenish gray, slightly calcareous to dolomitic. Faint laminae, bands, and some streaked bedding. Irregular to some regular thick parting; regular and slightly conchoidal to irregular fracture. A 3/4-inch yellowish-buff blebby to lenticular algal dolomite layer at 286.7; blebs becoming embedded in light gray silty limestone near base. Some thin to fine tan to brown silty limestone laminae at 288.5-288.8.
289.8	291.4	Oil shale: Olive green, dolomitic. Faint streaked bedding and rare laminae. Irregular thick to medium parting; irregular and some slight to coarse hackly fracture. Some very indistinct vermiform stringers.
291.4	295.8	Marlstone and mudstone: Medium to light olive gray, dolomitic to slightly calcareous. Faint regular laminae and bands; becoming irregularly streaked near bottom. Regular to irregular thick to rare medium and thin parting; regular to some irregular fracture. buff and rare tan algal dolomite at 291.6-291.9; 1-inch tan wavy stringer at 292.8.

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Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
295.8	299.4	Oil shale: Medium to some dark and light olive green and olive gray, dolomitic. Faint to some moderately distinct streaked bedding and some very fine to thin laminae. Irregular thick to rare medium and thin parting; irregular and some coarse hackly to slightly conchoidal fracture. A very thin light slightly greenish gray tuffaceous layer with abundant biotite and hornblende at 297.8.
299.4	301.0	Marlstone: Olive gray to very light slightly greenish gray, slightly calcareous. Faintly laminated. Irregular to rare regular thick to rare medium parting; regular fracture. Irregularly layered buff calcareous mudstone at 299.6-299.8. Faintly streaked to massive light gray tight siltstone at 299.8-300.2 (abundant fine pyrite blebs). Sample of light gray pyritic siltstone from 300.1 feet: X-ray--quartz, analcime, pyrite.
301.0	303.6	Marlstone: Light to rare medium olive green, dolomitic. Faint laminae and bands. Regular to irregular thick parting; regular to some irregular and conchoidal fracture. Abundant very fine dark pyrrhotite (?) flecks.
303.6	307.3	Oil shale: Light to medium olive green and olive gray, dark zones at 303.65-304.0 and 305.8-306.5, dolomitic. Faint to moderately distinct streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Abundant very fine disseminated bright metallic flakes and specks. Sample of dark olive-gray oil shale with abundant very fine bright metallic flakes and specks from 305.9 feet: X-ray--quartz, calcite, dolomite, feldspar, aragonite, pyrite, illite.
307.3	308.5	Siltstone: Slightly brownish gray, slightly calcareous. Massive to very faintly bedded. Irregular to fairly regular thick parting; fairly regular fracture. Sparse carbonaceous debris. Regular contacts. Sample of siltstone from 308.4 feet: X-ray--quartz, analcime, dolomite, feldspar, calcite, Mg-siderite, illite.
308.5	312.1	Oil shale: Olive gray to some olive green, dolomitic. Faint laminae and bands to very faint streaked bedding. Irregular to some regular thick parting; fairly regular to irregular and conchoidal fracture. Thin buff algal layer at 311.9.
312.1	313.7	Marlstone: Light slightly olive gray to buff, dolomitic. Faint laminae and bands. Fairly regular to irregular thick parting; irregular and slightly conchoidal fracture. Some very fine dark pyrrhotite? Large white dense to chalky lens with some pyrite streaks at 312.9.
313.7	315.8	Oil shale: Medium to rare dark olive gray and brownish gray, dolomitic. Faint streaked bedding; some nearly massive in upper part. Irregular thick parting; slightly conchoidal to irregular fracture. Abundant very fine bright pyrrhotite (?) at 314.7-315.0.

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From	To	Description
315.8	316.2	Tuff: Dirty tan and some buff and brown, silty. Moderately distinct laminae in upper inch; faintly variegated in lower part. Regular upper contact; slightly irregular lower contact. Sample of tuff from 315.95 feet: X-ray--analcime, quartz, feldspar.
316.2	318.0	Marlstone: Light to some medium gray and light olive gray to buff, medium olive-gray oil shale in lower 0.3 foot, dolomitic. Faint laminae and thin bands; wavy at 317.5-317.6. Irregular thick to some medium parting; conchoidal to irregular fracture. Few thin light gray to buff chert layers, stringers, and streaks.
318.0	318.6	Oil shale: Dark and some medium brownish gray to black, dolomitic. Faint streaked bedding. Slightly irregular thick parting; slightly irregular to rare coarse hackly fracture. Abundant very fine round crystal blebs in middle part.
318.6	319.2	Algal mudstone: Tan to brown, some medium to dark brownish gray, dolomitic. Faint slightly wavy layers and streaks to nodular masses. Few waxy to vitreous black organic streaks in lower part. Sample of tan dolomitic mudstone from 318.75 feet: X-ray--dolomite, quartz.
319.2	319.6	Oil shale: Dark brownish gray to black, some satiny to resinous luster, dolomitic. Faint streaked bedding. Abundant very fine disseminated pyrite blebs and streaks. Rare thin brown streaks. Sample of dark brownish-gray to black oil shale from 319.4 feet: X-ray--dolomite, quartz, calcite, feldspar, pyrite, illite, Mg-siderite.
		NOTE: Core section 319.4-320.3 was jammed at top of core barrel and was not recovered until Core #12 (357.5-369.9). Top of this section definitely fits with bottom of Core #8 at 319.4.
319.6	320.3	Oil shale: Olive gray to olive green, rare yellowish-tan streaks, very slightly calcareous to dolomitic. Faint streaked bedding. Irregular to regular thick parting; irregular to conchoidal fracture; light olive-gray marlstone rubble in lower inch.
320.3	320.6	Missing
320.6	321.2	Oil shale: Medium to light olive gray, dolomitic. Faint to fairly distinct bands and laminae. Irregular thin to thick parting; hackly to regular fracture. Short very thin buff vermiform stringer 320.8.
321.2	322.2	Marlstone and oil shale: Buff and light gray to some medium olive gray. Faint to moderately distinct irregular bands and streaks. Regular to irregular thick parting; conchoidal to irregular fracture. Thin black oil-shale stringer at 321.7. Some very fine round crystal blebs in lower part.

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From	To	Description
322.2	323.2	Oil shale: Medium to rare dark olive gray and rare yellowish tan, calcareous to dolomitic. Moderately distinct to very faint streaked bedding. Irregular thick to some medium parting; irregular to conchoidal fracture. Abundant streaks of very fine round tan mineral grains in upper part. Abundant very fine disseminated dark pyrrhotite(?) specks in lower part. Few small tan marlstone lenses in lower part. Sample of oil shale with abundant very fine tan mineral grains from 322.4 feet: X-ray--dolomite, calcite, quartz, feldspar, pyrite, Mg-siderite.
323.2	324.3	Marlstone: Light to medium olive gray, dolomitic. Faintly laminated to banded. Irregular to regular thick to medium parting; conchoidal to regular fracture. Abundant very fine dark pyrrhotite (?) flecks. Small massive pyrite blebs at 323.4. Thin buff-white earthy layer at 323.7.
324.3	325.9	Marlstone: Light gray to nearly white, dolomitic. Faint bands and laminae. Irregular to regular thick parting; irregular and conchoidal to regular fracture. Abundant very fine dark pyrrhotite flecks. Few silty to sandy-textured limestone bands in middle part. Sample of marlstone with very fine dark flecks from 324.6 feet: X-ray--dolomite, quartz, calcite, feldspar, illite, pyrrhotite.
325.9	326.9	Marlstone: Buff to rare light and medium olive gray, dolomitic. Very faint laminae and streaked bedding. Regular to irregular thick to medium parting; irregular to slightly conchoidal fracture. Embedded nodular contact with oil shale below.
326.9	327.1	Oil shale: Light to rare dark brownish gray, calcareous to dolomitic. Faint to moderately distinct irregular to regular laminae. Abundant fine pyritic crystalline streaks and blebs in upper inch.
327.1	328.2	Oil shale: Dark and some medium brownish gray to black. Faint streaked bedding and discontinuous laminae. Irregular to regular thick to medium parting; irregular fracture. Rare small to fine brown dolomite lenses.
328.2	328.9	Oil shale: Medium and some dark olive gray and brownish gray, dolomitic. Faint laminae and bands. Irregular thick parting; irregular to slightly conchoidal fracture. Irregularly bedded to nodular brown dolomite (?) in upper 2 inches. Thin brown to gray laminated chalcedony (?) lens at 328.7.
328.9	329.7	Oil shale: Medium to light olive gray, dolomitic. Faintly laminated. Irregular thick parting; irregular to conchoidal fracture. A 1/4-to 3/4-inch grayish-brown biotitic tuff stringer at 329.2.
329.7	330.5	Marlstone: Light olive gray to almost neutral gray, dolomitic. Faint laminae and some bands. Irregular to regular thick to medium parting; regular to conchoidal fracture. Few white earthy to dense laminae. Few small massive pyrite blebs near top.

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From	To	Description
330.5	332.8	Oil shale: Medium to rare light and dark olive gray, dolomitic. Faint streaked bedding and rare laminae. Irregular thick parting; irregular fracture. Few small gray to tan chalcedony (?) lenses. Abundant fine calcitic streaks in lower 0.3 foot.
332.8	333.5	Oil shale: Dark and some medium brownish gray to black, dolomitic. Faint streaked bedding. Slightly irregular thick to medium parting; irregular fracture. Coarse light brownish-gray chert (?) breccia in wavy bedded oil shale at 333.3-333.4 (This is where the layered tuff should occur). Sample of chert breccia from 333.4 feet: X-ray--quartz, dolomite, pyrite, feldspar, calcite.
333.5	334.9	Oil shale: Medium to light olive gray and olive green, dolomitic to slightly calcareous. Faint laminae, bands, and some streaked bedding. Irregular thick to some medium parting; irregular and conchoidal fracture. Abundant very fine lacy stringers of pyrite and calcite at 334.5-334.7.
334.9	336.7	Marlstone: Light gray, buff in lower 0.3 foot, dolomitic. Faintly laminated. Irregular to regular thick parting; conchoidal to regular fracture. A 1-inch very irregular indistinctly bounded dense white to gray chert inclusion at top; thin white layer at 335.3. Thin white earthy biotitic tuff band at 336.4; some fine biotitic streaks in lower 0.2 foot.
336.7	338.3	Oil shale: Olive gray and grayish brown to black, mostly dolomitic. Faint to distinct fairly regular to irregular laminae and streaks. Irregular to slightly irregular thick parting; irregular and rare coarse hackly fracture. Some small to large dark tuff (?) nodules, streaks, and stringers. Sharp very wavy contact with leaner oil shale below.
338.3	339.4	Oil shale: Medium and rare light brownish gray to olive green, dolomitic to calcareous. Faint laminae and bands. Irregular thick parting; irregular and conchoidal fracture. Very sharp regular contact with marlstone below.
339.4	340.1	Marlstone: Light almost neutral to olive gray, dolomitic. Regular to irregular thick parting; conchoidal to regular fracture. Thin gray pyritic silty to sandy band at 340.0. Wavy to nodular tan to buff dolomite at base.
340.1	340.4	Oil shale: Medium to some dark brownish gray and olive gray. Faint to distinct laminae and bands. Few dense tan dolomite inclusions.
340.4	341.0	Oil shale: Dark brownish gray to black, rare resinous to waxy luster. Very faint laminae and streaked bedding becoming marked by irregular fine to thin brown to tan streaks and lenses in lower part. Fairly regular to irregular thick to thin parting; irregular and some coarse hackly fracture. Fairly abundant fine pyrite blebs in brown streaks in lower part; also some very fine crystals. Sample of very dark brownish-gray oil shale from 340.6 feet: X-ray--dolomite, calcite, quartz, feldspar.

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Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
341.0	342.2	Oil shale: Medium olive gray and brownish gray to black. Fairly distinct to faint streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Abundant very fine to moderately coarse disseminated crystals and crystalline patches. Sample of olive-gray to black oil shale with very abundant crystals from 341.6 feet: X-ray--calcite, dolomite, quartz.
342.2	344.0	Marlstone: Buff to some light olive gray and brownish gray, dolomitic. Fairly distinct to faint bands. Fairly regular to irregular thick parting; regular to slightly conchoidal and irregular fracture. Abundant fine to moderately coarse calcite crystals commonly concentrated in certain layers.
344.0	345.4	Marlstone and mudstone: Light gray, some buff in upper part. Faint distorted streaked bedding. Irregular parting and fracture. Abundant fine to moderately coarse calcite crystals commonly concentrated in streaks and patches.
345.4	346.0	Marlstone and oil shale: Marlstone as above becoming streaked with dark oil shale and abundant small tan to grayish-brown dolomite lenses.
346.0	347.2	Oil shale: Dark to some medium brownish gray and black. Faint to some fairly distinct streaked bedding. Slightly irregular to irregular thick parting; irregular and some slight to coarse hackly fracture. Abundant fine to moderately coarse disseminated crystals. Some grayish-brown streaks and lenses.
347.2	348.7	Oil shale: Medium and rare dark to some light olive gray. Faint very fine laminae and streaked bedding. Irregular to regular thick parting; slightly irregular and conchoidal to regular fracture. Abundant moderately coarse to very fine crystals, becoming concentrated in fine diagonal to horizontal streaks in lower part.
348.7	349.9	Marlstone: Light to medium gray, dolomitic. Faint to rare distinct bands, laminae, and streaks. Irregular to regular thick parting; regular to irregular fracture. Rare fine to thin crystalline streaks (some with slight rusty stains). A 0.1 foot white tuff with abundant hornblende at 349.6. Sample of hornblende tuff from 349.6 feet: X-ray--quartz, feldspar, dolomite, biotite, hornblende.
349.9	353.5	Oil shale: Medium to dark olive gray and some brownish gray. Faint streaked bedding. Fairly regular to irregular thick parting; irregular fracture. Abundant moderately coarse disseminated crystals. Sample of oil shale with disseminated calcite crystals from 352.8 feet: X-ray--calcite, dolomite, quartz, feldspar, pyrite.
353.5	354.7	Marlstone: Buff to light gray, dolomitic. Faint laminae and bands. Irregular to fairly regular thick to medium parting; irregular to regular fracture. Abundant fine to moderately coarse crystals.
354.7	355.5	Oil shale: Olive gray, dark brownish gray with brown streaks at 354.75-354.95, dolomitic. Faint streaked bedding and some laminae. Fairly abundant moderately coarse to fine crystals in upper part. Some very fine bright pyrite (?) blebs in lower part.

Illustration No. SBR-4726P Sheet 11 of 20.

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
355.5	356.8	Oil shale: Dark brownish gray and some black, rare olive green in lower part. Faint very fine laminae to irregular streaked bedding. Regular to irregular thick parting; fairly regular to irregular fracture. Abundant fine to some coarse disseminated crystals. Sample of dark oil shale with fine disseminated crystals from 355.7 feet: X-ray--dolomite, quartz, calcite, feldspar, illite.
356.8	358.0	Oil shale and marlstone: Olive-green oil shale, light slightly greenish-gray marlstone at 357.1-357.4. Faint streaked bedding. Irregular thick parting; irregular fracture. Abundant fairly coarse crystals. Rare tan dolomite lenses. (357.4-357.5 missing.)
358.0	359.4	Oil shale: Olive green and olive gray to some medium and dark brownish gray, dolomitic. Faint streaked bedding and some slightly disrupted laminae. Irregular thick parting; irregular fracture. Abundant fairly coarse crystals. Abundant small tan dolomite nodules in upper 0.3 foot.
359.4	360.6	Oil shale and marlstone: Medium greenish gray in upper part to light almost neutral gray in lower part. Faint slightly irregular bands and laminae. Irregular thick parting; irregular fracture. Abundant fine to coarse crystals becoming thinly layered in lower part.
360.6	361.6	Oil shale: Medium to some dark olive gray and brown. Faint streaked bedding. Slightly irregular thick parting; irregular slightly hackly fracture. Abundant fairly coarse disseminated crystals. A 1-3/4-inch buff mudstone band with very sparse biotite at 361.2.
361.6	362.2	MAIN TUFF: Buff to white, massive. Abundant hornblende and biotite in upper part. A fine pyritic streak near top. Sample of tuff from 361.7 feet: X-ray--K feldspar, biotite.
362.2	363.0	Marlstone and oil shale: Light to medium olive gray and some grayish brown, some buff, dolomitic. Faint and rare distinct bands and laminae. Irregular thick to medium parting; conchoidal to irregular fracture. Some disseminated crystals.
363.0	364.1	Marlstone: Light olive gray becoming medium gray near bottom, dolomitic. Faint thin laminae and bands. Slightly irregular to irregular thick parting; slightly conchoidal to irregular fracture. Common medium-fine crystals concentrated in fine to thin layers.
364.1	365.3	Oil shale: Medium and some light olive green to olive gray, dolomitic. Very faintly streaked to faintly laminated and banded. Irregular thick parting; irregular and some slightly hackly fracture. Abundant moderately coarse disseminated crystals.
365.3	366.0	Oil shale: Medium to dark olive gray, dolomitic. Faint laminae and streaked bedding; laced with fine dark gray to black pyritic crystalline streaks and stringers. Irregular thick parting; irregular hackly fracture. Sample of oil shale with fine crystalline streaks and stringers from 365.8 feet: X-ray--dolomite, calcite, quartz, feldspar, illite, pyrite.

Illustration No. SBR-4726P Sheet 12 of 20.

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
366.0	374.0	Oil shale and marlstone: Medium to some light olive gray and greenish gray to almost neutral gray, dolomitic. Faint laminae, bands, and some streaked bedding. Abundant fine gray crystalline blebs, streaks, and stringers in most parts.
374.0	375.4	Oil shale: Medium to some dark olive gray and brownish gray, dolomitic. Very faintly bedded to faintly laminated. Irregular thick to medium parting; slightly conchoidal to irregular fracture. Thin tan-buff earthy biotitic tuff stringer at 374.9.
375.4	377.6	Oil shale: Olive gray to olive green, dolomitic. Faint streaked bedding and very fine laminae. Fairly regular to irregular thick to some medium parting; irregular and conchoidal to slightly hackly fracture. Abundant medium to fine disseminated crystals.
377.6	381.5	Oil shale and marlstone: Medium to some light almost neutral gray to olive green, dolomitic to slightly calcareous. Faint bands, laminae, and streaked bedding. Irregular thick to some medium parting; conchoidal and irregular fracture. A 3/4-inch brownish-gray fine-grained crystalline band at 379.05; occasional fine crystalline streaks and patches elsewhere. Abundant very fine disseminated pyrrhotite (?) in lower part. Sample of fine-grained crystalline band from 379.0 feet: X-ray--calcite, dolomite, quartz, pyrite.
381.5	382.5	Oil shale: Medium to dark olive gray, dolomitic. Very faint to some moderately distinct laminae and streaked bedding. Irregular thick parting; irregular fracture. Some fine disseminated crystals near top. Rare fine to thin pyritic streaks and lenses.
382.5	383.5	Oil shale: Medium to some light olive gray, dolomitic. Very faint laminae, bands, and streaks. Irregular thick to medium parting; irregular fracture.
383.5	384.5	Algal mudstone (?): Orange buff to gray white, dolomitic, silty. Moderately distinct to faint irregular wavy to contorted layers; conglomeratic near bottom. Irregular parting and fracture; slightly porous. Few pale orange irregular platy inclusions in upper part. Sample of light gray mudstone from 383.9 feet: X-ray--dolomite, quartz, feldspar.
384.5	386.3	Oil shale: Olive green to greenish gray, buff and light gray near top, dolomitic to slightly calcareous. Very faint laminae and bands; irregular bedding with algal mudstone stringers in upper 0.3 foot. Irregular to some fairly regular thick to medium parting; slightly conchoidal to irregular and coarse hackly fracture.
386.3	391.1	Marlstone and lean oil shale: Light and medium greenish and olive to almost neutral gray, some buff, dolomitic to calcareous. Faint to some distinct bands and laminae. Irregular to regular thick parting; conchoidal to regular fracture. Fine disseminated calcite(?) crystals becoming abundant in lower part. Fine white biotitic tuff lamina at 390.5.
391.1	391.5	Siltstone and silty sandstone: Buff and white with dirty gray mottling. Irregular parting and fracture; slightly porous.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
391.5	392.2	Oil shale: Medium slightly olive gray, 3/4-inch dark brownish-gray stringer near top. Very faint irregular laminae with some distinct vermiform buff biotitic tuff streaks and stringers. Irregular parting and fracture. Some gray to buff cherty inclusions in lower part.
392.2	393.7	Oil shale: Light and medium olive gray to tan to some dark brownish gray. Faint to fairly distinct laminae. Irregular to some regular thick parting; slightly conchoidal to some irregular coarse hackly fracture. A thin gray-buff biotitic tuff lamina at 392.4 and a fine gray lamina at 392.7.
393.7	394.7	Oil shale: Very dark to some medium olive gray, dolomitic. Faint to moderately distinct streaks and regular to displaced laminae. Irregular thick parting; irregular and some coarse hackly fracture. Very thin brown marlstone stringer at 394.1.
394.7	395.7	Oil shale: Dark olive gray to medium olive green, dolomitic to calcareous. Faint laminae to very faint streaked bedding. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. Rare fine disseminated crystals.
395.7	396.7	Oil shale: Medium to light olive green, calcareous to dolomitic. Faintly banded. Irregular to regular thick parting; irregular and conchoidal fracture.
396.7	399.2	Marlstone and mudstone: Light greenish gray to light and medium almost neutral gray, dolomitic to calcareous. Faint and some distinct bands and laminae. Irregular to regular thick to medium parting; regular to slightly irregular and conchoidal fracture. Some calcite crystals in lower part.
399.2	401.1	Oil shale: Medium olive gray to some black, slightly calcareous to dolomitic. Faint distorted streaks and displaced bedding to very faint very fine regular laminae. Irregular to fairly regular thick parting; irregular and some coarse hackly fracture. Some fine crystalline stringers and disseminated crystals in upper part. Few fine prismatic crystalline streaks at 401.0.
401.1	403.9	Marlstone: Medium and some dark gray in upper part to light and medium gray in lower part, dolomitic to moderately calcareous. Faint bands and laminae. Regular to irregular thick parting; irregular and conchoidal to regular fracture. Abundant very fine calcite blebs and streaks in lower part. Sample of gray marlstone from 401.6 feet: X-ray--dolomite, quartz, calcite, feldspar, pyrite, illite, montmorillonite.
403.9	404.5	Oil shale: Medium and some light brownish gray to black, dolomitic. Distinct to faint streaked bedding and some slightly disrupted laminae. Slightly irregular thick parting; irregular fracture. Some fine brown crystalline streaks and patches.
404.5	405.6	Oil shale: Dark brownish gray to black, dolomitic to calcareous. Faint streaks and slightly disrupted laminae. Irregular to some regular thick parting; irregular and some coarse hackly fracture. Abundant fine disseminated crystals. Sample of very dark oil shale with fine disseminated crystals from 404.8 feet: X-ray--dolomite, calcite, quartz, feldspar, pyrite, illite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
405.6	406.6	Oil shale: Medium to light olive gray, dolomitic to slightly calcareous. Very faintly bedded to faintly laminated. Irregular thick to medium parting; conchoidal fracture. A thin irregular broken light gray to tan cherty to marly layer at top.
406.6	409.2	Marlstone (and some limestone?): Light olive and greenish gray to buff and some light to medium gray, dolomitic to very calcareous. Faint laminae and bands to faint and some fairly distinct irregular layers and stringers. Fairly regular to irregular thick to some medium and thin parting; slightly conchoidal to irregular fracture. Abundant fine calcite crystals in lower part.
409.2	412.2	Oil shale: Medium to dark olive gray and brownish gray, some black, some tan to buff streaks near top, dolomitic. Faint slightly disrupted to regular laminae. Irregular to fairly regular thick to rare medium parting; slightly irregular to some coarse hackly fracture. Abundant fine crystals in upper part. Sample of dark to medium brownish and olive-gray oil shale (without crystals) from 410.6 feet: X-ray--dolomite, calcite, quartz, feldspar, pyrite, illite, Mg-siderite.
412.2	415.8	Marlstone (lean oil shale in upper part): Medium to light gray, some olive gray in upper part. Faint to some moderately distinct laminae and bands. Irregular to rare regular thick parting; regular to irregular and conchoidal fracture. A 3/4-inch tan biotitic tuff band at 413.0 with vermiform stringers extending 1/2-to 3/4-inch into marlstone below. A 1/4-inch white earthy and silty tuff(?) lamina at 413.7. Some very fine dark pyrrhotite (?) flecks in lower half.
415.8	416.2	Mudstone: Light brownish gray to buff, hydrophobic (acid beads up). Faintly conglomeratic; rare slightly irregular laminae. Abundant very small porous patches--some with pyrite. Sample of mudstone conglomerate from 416.0 feet: X-ray--dolomite, quartz, pyrite, feldspar.
416.2	418.3	Oil shale: Medium to very dark brownish gray and olive gray, slightly calcareous to dolomitic. Fairly distinct to faint disrupted laminae and streaked bedding. Fairly regular to irregular thick to rare medium parting; slightly irregular to rare coarse hackly fracture. Fine tan tuff lamina at 416.5.
418.3	419.8	Oil shale: Olive gray to almost neutral gray, calcareous. Very faint laminae and bands. Irregular thick to medium parting; irregular fracture.
419.8	420.8	Marlstone: Light to some medium gray, calcareous. Faint to rare distinct laminae; becoming interbedded with thin buff silty to fine sandy-textured limestone layers in lower part. Slightly irregular thick to rare thin parting; regular to some irregular fracture.
420.8	422.9	Marlstone: Nearly white to light gray and rare olive gray, calcareous, silty in upper part. Very faint laminae and some bands. Regular to some irregular thick to some thin parting; regular to slightly conchoidal fracture. Some thin limestone layers near top; silty to moderately coarse crystalline limestone with fine slightly crinkly laminae at 421.6-421.9. Rare thin white lenses and platy inclusions in lower part.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
		Sample of very light gray silty marlstone from 421.3 feet: X-ray--dolomite, quartz, calcite, feldspar.
422.9	424.0	Oil shale: Dark brownish gray to some black, some medium brownish and olive gray near top and bottom, dolomitic to calcareous. Moderately distinct to faint streaked bedding becoming regularly laminated in lower part. Irregular to regular thick parting; irregular to fairly regular fracture. Abundant fine disseminated crystals and crystalline streaks down to 423.8. Abundant very fine pyrite blebs at 423.8-423.9.
424.0	426.5	Marlstone: Medium to light olive gray and greenish gray, calcareous, slightly silty in parts. Faintly laminated. Slightly irregular thick parting; slightly irregular fracture. Abundant fine crystals, commonly concentrated in fine to thick layers. A 1/2-inch white biotitic tuff band at 424.3.
426.5	428.5	Marlstone: Light greenish gray to some white, light to medium olive gray in lower 0.3 foot, dolomitic. Faintly laminated and banded. Fairly regular to irregular thick to some thin parting; slightly irregular and conchoidal fracture. Abundant fine crystalline calcite blebs, streaks, and thin layers.
428.5	429.2	Oil shale: Dark brownish gray to black, some medium brownish and olive gray near top and bottom, dolomitic. Faint to some moderately distinct streaked bedding and some laminae. Slightly irregular thick parting; slightly irregular fracture. Some fine crystalline streaks and very fine disseminated pyrite blebs.
		Sample of dark brownish-gray oil shale from 428.9 feet: X-ray--dolomite, quartz, feldspar, illite, pyrite, calcite.
429.2	431.0	Marlstone: Light to some medium greenish gray and olive gray, dolomitic. Faint and some distinct laminae and bands. Fairly regular to irregular thick to rare medium and thin parting; regular to conchoidal fracture. Abundant fine dark gray calcite streaks, laminae, and blebs.
431.0	431.8	Oil shale: Dark and some medium brownish gray, dolomitic. Faint streaked bedding; very fine laminae near top. Irregular to fairly regular thick parting; irregular fracture. Abundant very fine disseminated crystals and crystalline streaks. Abundant very fine pyrite. Fine tan-buff biotitic tuff lamina at 431.75.
431.8	432.1	Oil shale: Olive gray. Very faintly bedded. Abundant thin to fine vermiform brown crystalline stringers.
432.1	436.2	Oil shale: Medium and some light olive gray to greenish gray, dolomitic to calcareous. Faint streaked bedding and very fine laminae; distinct thin to fine laminae at 432.7-433.1. Regular to irregular thick parting; regular to irregular and conchoidal fracture. Abundant very fine white calcite blebs and streaks at 433.2-434.2. A 1/2-inch white biotitic tuff lamina at 435.4.
436.2	437.2	Marlstone: Very light greenish gray, some buff near bottom. Faintly laminated to massive. Slightly irregular thick to some thin parting; regular and rare hackly fracture. Some very fine white calcite blebs.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
437.2	438.7	Marlstone: Light gray to light olive gray and tan to buff, calcareous. Faintly laminated to massive and finely speckled. Regular to irregular thick to thin parting; hackly to regular fracture. Abundant fine white calcite specks. Light gray calcareous siltstone at 437.8-438.0.
438.7	439.8	Oil shale: Light to medium olive gray, dolomitic. Very faint streaked bedding and some very fine laminae. Irregular thick parting; irregular to conchoidal fracture. Abundant very fine white specks.
439.8	441.8	Oil shale (?): Medium to light greenish gray, dolomitic to calcareous. Moderately distinct to very faint thin laminae. Regular to irregular thick parting; conchoidal to irregular fracture. Light brownish-gray fine crystalline limestone at 441.0-441.1. Abundant very fine white calcite specks in lower part. Sample of medium to light greenish-gray marlstone from 440.2 feet: X-ray--dolomite, quartz, feldspar, illite, montmorillonite, calcite.
441.8	442.8	Marlstone: Light gray to nearly white, slightly calcareous. Faintly laminated. Fairly regular thick to rare thin parting; regular fracture. Abundant fine white calcite blebs in upper part. Silty to sandy-textured limestone layers becoming abundant in lower part.
442.8	445.1	Marlstone and mudstone (oil shale?): Medium to light greenish gray and olive green, calcareous. Faint to some distinct thin to fine laminae; faint interrupted bedding in lower 0.8 foot. Regular to irregular thick to medium parting; slightly conchoidal and irregular to some hackly fracture. Some crystalline calcite blebs, streaks, and stringers; interbedded gray marlstone and light olive-green silty limestone at 444.1-444.3.
445.1	446.1	Mudstone: Light slightly greenish gray to rare medium olive gray. Faint slightly irregular bands and laminae. Fairly regular to irregular thick to some medium parting; slightly irregular fracture. Abundant crystalline calcite streaks and layers.
446.1	447.1	Marlstone (oil shale?): Medium to some light greenish to rare olive gray, slightly calcareous. Faintly laminated to nearly massive. Irregular thick to medium parting; conchoidal to coarse hackly fracture. Some fine calcite crystals near top and bottom.
447.1	448.4	Marlstone: Medium-light olive gray to olive buff, slightly calcareous. Faint laminae and rare thin bands. Regular to some irregular thick to rare thin parting; fairly regular fracture. Abundant fine white calcite blebs in some zones. Rare thin limestone layers.
448.4	449.7	Marlstone: Light slightly olive gray to olive buff, some buff and tan to rare grayish brown in middle, dolomitic to slightly calcareous. Faint to some fairly distinct laminae. Regular thick to medium parting; fairly regular to irregular fracture. Abundant fine white calcite blebs. Large gray-buff mudstone nodule in wavy laminae at 449.2.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
449.7	449.8	Missing.
449.8	451.2	Marlstone: Very light to medium-light slightly greenish gray, dolomitic to slightly calcareous. Very faintly banded and laminated to nearly massive. Regular to irregular thick parting; regular to conchoidal fracture. Some fine vermiform calcite stringers near top.
451.2	451.9	Oil shale: Medium to light olive gray, dolomitic. Faint to moderately distinct streaked bedding; very fine regular laminae in lower inch. Irregular thick parting; irregular to irregular fracture. Fine olive-buff earthy lamina at 451.8.
451.9	452.8	Marlstone: Medium to light greenish gray, slightly calcareous. Faint laminae and thin bands. Irregular thick to medium parting; regular to irregular and conchoidal fracture.
452.8	453.3	Marlstone and oil shale: Light olive-gray to olive-buff marlstone. Faint bands and laminae; distinct 1-1/2-inch dark brownish-gray oil-shale band at top. Fairly regular thick parting; hackly fracture. Abundant calcite crystals. Sample of dark oil shale with very abundant crystals from 452.9 feet: X-ray--calcite, feldspar, montmorillonite, illite.
453.3	454.0	Marlstone: Gray buff to light olive gray. Very faint laminae and bands. Irregular to regular thick parting; fairly regular fracture. Abundant fine calcite crystals, blebs, and streaks.
454.0	454.5	Oil shale: Light to medium and rare dark olive gray to brownish gray. Faint to moderately distinct laminae and streaks. Slightly irregular thick and rare thin parting; regular to conchoidal fracture.
454.5	457.5	Marlstone: Light to some medium slightly greenish and olive gray. Faint laminae and bands. Regular to irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine white calcite blebs. A thin white to light gray marlstone and tuff layer at top with some biotite.
457.5	458.2	Oil shale (?): Olive green. Very faint streaked bedding. Fairly regular thick parting; hackly fracture. Abundant fine crystals (like 452.9?).
458.2	459.9	Mudstone: Greenish gray, slightly calcareous. Very faint disrupted bedding; some gray discolorations. Irregular thick parting; irregular to fairly regular fracture.
459.9	461.8	Marlstone: Medium to light olive gray, dolomitic to calcareous. Faint laminae and bands; disrupted near top. Irregular to regular thick to medium parting; irregular to conchoidal fracture.
461.8	466.3	Marlstone (some oil shale upper part?): Medium and light olive gray to greenish gray, slightly calcareous. Faintly streaked to banded. Irregular thick parting; irregular to some coarse hackly fracture. Abundant fine white calcite blebs in some parts. A 1-inch buff silty and earthy tuff band at top. Thin white biotitic tuff stringers at 463.1-463.2.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
466.3	467.4	Marlstone: Light gray to buff, calcareous. Faint laminae and bands. Fairly regular thick to medium parting; slightly irregular fracture. Abundant very fine white calcite blebs. Fine white biotitic tuff lamina at 467.0; rare very fine silty biotitic streaks elsewhere.
467.4	468.0	Oil shale: Medium to some light and dark olive gray, dolomitic. Moderately distinct regular laminae in upper 0.2 foot; faint to moderately distinct streaked bedding in lower part. Regular to irregular thick parting; regular to slightly irregular fracture.
468.0	468.9	Marlstone and some oil shale: Buff and light to medium almost neutral gray to olive gray, dolomitic (hydrophobic in buff parts). Faint to some moderately distinct laminae, bands, and streaked bedding; some slightly crinkly bedding. Very thin white silty and earthy tuff lamina at 468.1. Buff zones are commonly silty. Sample of buff silty marlstone from 468.15 feet: X-ray--dolomite; trace quartz, feldspar.
468.9	471.1	Mudstone and claystone: Medium slightly greenish gray, slightly calcareous. Very faint streaks and some laminae. Irregular thick to medium parting; irregular fracture.
471.1	473.6	Marlstone and mudstone: Medium to light greenish gray, some buff to olive gray in upper part, slightly calcareous. Faint streaks and laminae; some disrupted. Irregular to fairly regular thick parting; slightly irregular to irregular fracture. Few zones with abundant fine calcite crystals.
473.6	474.8	Mudstone: Light gray green, calcareous, silty to sandy. Faint disrupted bedding. Irregular parting and fracture. Some gray limy streaks and stringers.
474.8	475.7	Oil shale: Black to some medium brownish gray and rare tan to buff, dolomitic. Faint streaked bedding with rare distinct tan to buff streaks and broken laminae. Irregular thick to medium parting; irregular and some hackly fracture. Few fine brown prismatic calcite streaks at 475.4-475.5. Fine vermiform gray-green mudstone stringers near top; sharp regular contact with buff marlstone below.
475.7	475.95	Marlstone: Buff to tan, dolomitic. Moderately distinct to faint slightly irregular and crinkly laminae; fine platy conglomerate at 475.85. Thin medium brownish-gray oil-shale band at bottom. A 1/4-inch white tuff lamina with very fine black grains at 475.75.
475.95	477.7	Sandstone and siltstone: Light olive gray to buff, very calcareous, medium coarse to very fine grained. Irregularly layered; some gray to brownish-gray clayey to muddy layers. Irregular to rare regular thick parting; fairly regular to irregular fracture. Some fine hornblende and biotite in upper part.
477.7	480.5	Mudstone and siltstone: Light to some medium slightly olive gray, calcareous. Faint slightly irregular bands and laminae. Fairly regular to irregular thick parting; fairly regular to irregular fracture; irregular crumbly broken core pieces in lower foot. A 0.1 foot white silty biotitic tuff at 478.0.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole 10

From	To	Description
480.5	482.0	Rubble: Mudstone as above and below.
482.0	490.0	Missing
490.0	497.0	Mudstone and siltstone: Light slightly olive gray, calcareous. Faint laminae and bands; commonly slightly irregular and occasionally disrupted. Irregular thick parting; irregular to fairly regular fracture.
497.0	498.0	Mudstone and claystone: Light to medium olive gray, calcareous. Very faint irregular and disrupted laminae and bands. Irregular thick to medium parting; irregular and some coarse hackly fracture.
498.0	500.0	Mudstone, siltstone, and sandstone: Light gray to slightly olive gray, calcareous. Faint irregular laminae and bands; 1-inch displacement at contact between sandstone and mudstone at 498.5-498.6. Irregular thick to some medium parting; irregular fracture.
500.0	501.6	Claystone: Olive gray to slightly greenish gray, calcareous. Faintly mottled and variegated to very faintly bedded. Very irregular thick to medium parting; very irregular coarse hackly fracture. Few very thin sandy oolitic stringers near bottom. Sample of olive-gray claystone from 500.4 feet: X-ray--quartz, K feldspar, calcite, illite, montmorillonite, pyrite, Mg-siderite.
501.6	504.0	Mudstone: White, oolitic, slightly calcareous. Very faintly variegated and mottled. Irregular thick parting; slightly irregular fracture.
504.0	530.0	Mudstone and siltstone: Light slightly greenish and olive gray, nearly white at 510-513, slightly to moderately calcareous. Massive to faintly variegated and mottled indicating complete disruption, brecciation, and deformation. Irregular parting and fracture. Rare small to large gray to buff round, angular, and platy limestone (?) inclusions.
530.0	540.4	Siltstone and very fine sandstone: Light slightly greenish and olive gray. Faintly variegated and mottled to massive. Irregular parting and fracture. Slightly permeable in parts.
	540.4	Bottom of core

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